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ABSTRACT

This review highlights issues in functional independence measurement and describes educationally-based functional independence measures applicable to students with disabilities. Increasing inclusion of students with disabilities in general education settings has resulted in a need for assessments to identify students' capabilities to meet the functional as well as academic demands of school. Students with disabilities often have difficulties at school because of physical, cognitive, behavioral, social, and emotional impairments that interfere with their ability to participate fully in learning activities. Specific norm-referenced and criterion-referenced instruments are reviewed for their usefulness in describing functional independence and functional challenges across educational settings. If the promise of legislative policies and school programs for students with disabilities is to be fulfilled, measures are needed to evaluate the functional impact of disabilities as well as the impact of educational curricula. (Contains 1 table and 29 references.) (Author/SLD)

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Functional Independence Measures for Students with Disabilities: Review of Issues and Methods

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Abstract

This review highlights issues in functional independence measurement and describes educationally-based functional independence measures applicable to students with disabilities. Increasing inclusion of students with disabilities in general education settings has resulted in a need for assessments to identify students' capabilities to meet the functional as well as academic demands of school. Students with disabilities often have difficulties at school because of physical, cognitive, behavioral, social, and emotional impairments which interfere with their ability to participate fully in learning activities. Specific norm-referenced and criterion-referenced instruments are reviewed for their usefulness in describing functional independence and functional challenges across educational settings. If the promise of legislative policies and school programs for students with disabilities is to be fulfilled, measures are needed to evaluate the functional impact of disabilities as well as the impact of educational curricula.

Functional Independence Measures for Students with Disabilities: Review of Issues and Methods

Functional Goals

Special education personnel are charged with designing intervention programs to optimize functional independence and school participation for students with disabilities. One barrier to the design of intervention programs is the lack of a developmental model for measuring functional skills and challenges at key ages across educational settings. A variety of assessment tools is available for developmental surveillance of motor, cognitive, and communicative impairments (Sattler, 2001). Yet these discriminative instruments, which assess an individual's performance compared to a normative sample, cannot capture the impact of a disability on the essential behavioral, social, physical, or academic skills needed for school participation. For example, determining that a student with cerebral palsy has an IQ score of 70 and a T score of 28 on the Peabody Developmental Motor Scale does not tell us about the student's mobility, self-care, academic skills, or communication abilities in the classroom.

A functional development approach would allow for operational definitions of a progression of tasks essential for independence at school as the student matures. It would also permit criterion referencing of those tasks. In so doing, it would have the advantages of specifying behaviors in which students may be deficient as well as relating the deficiencies to functionally important outcomes in school settings. The purpose

of this paper is to discuss issues related to situational variation and functional independence in students with disabilities. It is also to review methods currently available for assessing such students in those ways.

The term "functional" is used to characterize a class of behaviors (i.e., adaptive behaviors). A functional approach reflects a student's ability to meet the peer group's expectations for independence. Moreover, it directs assessment away from a typology centered on describing developmental impairment. Functional independence assessment focuses on the tasks on which students succeed and those on which they fail, as opposed to exploring reasons for the failure. The major advantage of the approach is that it specifies an interaction between the student and the environment. This interaction is used to determine the skills necessary for independent functioning. An additional benefit is that, based upon peer group expectations, it would be sensitive to cultural variation. Such a framework is most valuable if it acknowledges behavior/setting interactions while simultaneously measuring a student's independence and special needs. This approach can facilitate an intervention framework for setting attainable goals to increase independence and to monitor progress.

Legislative Policy and Educational Reform

There are multiple reasons for assessing functional independence in students with disabilities. Major legislation (PL 94-142, PL 99-457, reauthorized as PL 101-476, Individuals with Disabilities Education Act [IDEA]; PL 101-336, the Americans with

Disabilities Act [ADA]) has allowed students with disabilities to have increasing opportunities to participate more fully in school and community. Policy implications of these legislative initiatives require assessing functional skills. Classification systems, such as DSM-IV (1994) and special education eligibility criteria, have been developed to enhance the description of goals and outcomes by requiring documentation that symptoms have a substantial functional impact on a student's adaptive or educational performance. For instance, in children with cognitive impairments, assessments of adaptive behavior, resources, and support are required before a child can be classified as having mental retardation. In schools, functional independence assessments can yield baseline descriptive data, assist with the selection of educational goals, and guide the evaluation of intervention efforts. To meet the demands for inclusive education reforms, assessment procedures must be broadened to include information on functional independence.

Inclusive education reforms obviate the need for assessments designed to determine special class placements or to categorize students' disabilities (Reschly, 1986, 1988; Reschly & Ysseldyke, 1995; Reschly, Tilly, & Grimes, 1999). The focus has become less on why students fail and more on how or what they fail (Christenson & Ysseldyke, 1989; Linn, 1993). New trends in assessment are shifting focus away from inferences about the psychological characteristics of students (e.g., cognitive abilities, motivation, personality) toward the actual educational performance of students (e.g., achievement, functional skills,

independence). This new focus calls for disability to be defined from an instructional perspective (Dever, 1990; Gresham, 1991). Therefore, the environmental context of the student is essential for both explaining behavior and designing interventions. Measures of students' functional independence in realistic school contexts allow for low-inference, data-based educational decision-making. In so doing they tighten the link between assessment and classroom practices.

Norm-Referenced Functional Independence Measures

To track functional independence in students with developmental disabilities, several discriminative measures are available to educational professionals; for example, the Vineland Adaptive Behavior Scales (VABS), Adaptive Behavior Evaluation Scale--Revised (ABES-R), and the Scales of Independent Behavior (SIB). Additionally, the Pediatric Evaluation of Disability Inventory (PEDI) is used most often in pediatric rehabilitation settings.

The Vineland Adaptive Behavior Scale is a descriptive measure which records specific activities in the areas of communication, daily living, socialization, and motor skills for children from birth to 18 years old (Sparrow, Balla, & Cicchetti, 1984). Maladaptive behaviors are recorded as well. The VABS is a semi-structured interview of typical performance and is scored trichotomously (never, sometimes/partially, usually). The interview takes 20 to 60 minutes. It has been used with children who have motor, cognitive, and sensory disabilities. The Communication domain includes reading as well as receptive,

expressive, and written language; the Daily Living Skills domain examines domestic skills and self-care activities; and the Socialization domain encompasses play, coping, and leisure skills. The VABS classroom edition (Sparrow, Balla, & Cicchetti, 1985) is a questionnaire designed for teachers to report the basic academic functioning in school for students 3 to 12 years. Administration time is approximately 20 minutes.

The revised Adaptive Behavior Evaluation Scale (McCarney, McCain, & Bauer, 1995) includes both home and school versions for children between 5 and 18 years of age. Parent and teacher rating forms take approximately 20 minutes to complete. The ABES-R is a norm-referenced measure designed to assess the ten adaptive skill areas identified by the American Association on Mental Retardation as needed for the diagnosis of mental retardation: communication, self-care, home living, social, community use, self-direction, health and safety, functional academics, leisure, and work. Items are rated on a 6-point scale anchored by 0 (Is not developmentally appropriate) to 5 (Demonstrates the behavior at all times).

The Scales of Independent Behavior was designed to describe functional skills required for independence across home, social, and community settings for infants through adults (Bruininks, Woodcock, Hill, & Weatherman, 1984). Estimated administration time is 30 to 60 minutes. Two major dimensions are assessed: Adaptive Behavior Skills and Problem Behavior Areas. Adaptive behavior domains include gross and fine motor skills; social interaction, language comprehension, and expression; eating,

toileting, dressing, personal self-care, and domestic skills; and home/community orientation. Adaptive items are scored on a four-point scale: 0 (never or rarely) to 3 (almost always successful). The SIB has been used in schools and in the community with mentally retarded individuals. However, a student cannot obtain a score above 0 for a task if assistance from another person is needed. This type of rating scale is not sensitive to gains made by students working interdependently and who may never perform without some assistance.

The Pediatric Evaluation of Disability Inventory (Haley, Coster, Ludlow, Haltiwanger, & Andrellos, 1992) is a discriminative measure which assesses functional skills, caregiver assistance, and modification of environments for self-care, mobility, and social functioning of children. It is appropriate for children 6 months to 7 years. PEDI social function includes communication, problem resolution, play, peer and adult interaction, memory, household chores, self-protection, and community safety. An ordinal scale is used to rate caregiver assistance and modification items; dichotomous scoring is used for the motor, self-care, and social domains. Administration time is estimated between 45 to 60 minutes.

Though all of the above functional independence measures examine content areas relevant to school functioning (e.g., interpersonal skills, personal care, using school materials), they were designed primarily for discriminative purposes. As norm-referenced assessments, they help to define how a student's performance compares with that of same-age or same-grade peers.

Reschly (1990) preferred criterion-referenced skill assessments as better suited for program planning purposes. Tools are needed to assess the functional impact of disabilities across various situations and the functional outcomes of developmental, psychosocial, and educational interventions. Several representative instruments are summarized in Table 1 because they illustrate functional independence measures of disability.

Criterion-Referenced Functional Independence Measures

The Functional Independence Measure for Children (WeeFIM) is a tool that assesses neurodevelopmental disabilities comprehensively. It is used to track progress and to evaluate the outcomes of biomedical, psychosocial, and developmental interventions. Developed collaboratively by Msall and colleagues (1993, 1994), the WeeFIM is a discipline-free measure of consistent performance of functional skills in children 6 months to 8 years. It can also be used through adolescence with individuals who have significant neurodevelopmental disabilities. Administration time is 10 to 15 minutes. Domains assessed include self-care, sphincter control, transfers, locomotion, communication, and social cognition. The WeeFIM is a criterion-referenced, 7-point scale ordered from total dependence to complete independence. Graded responses on the WeeFIM allow for assessing a child's degree of independence. Gradual increases in functional independence can be monitored easily to determine the effectiveness of intervention efforts. Work with the WeeFIM has shown the scale to be responsive in measuring changes in children with cerebral palsy in early intervention programs (Msall, Rogers, Ripstein, Lyon, & Wilczenski, 1997).

An upward extension of the WeeFIM, currently under development, is the School Independence Measure (SIM). The SIM is a rating scale that measures the degree of a student's functional independence in performing various academic and non-academic activities in a school setting. Rather than classifying different causes or types of disabilities, the SIM addresses situational variation in a student's independence. The focus of measurement is on the degree of independent performance of tasks, not what caused the disability. Items assess behavior/school situation interactions by evaluating a students's current level of independent functioning in school situations as well as the amount of assistance a student needs beyond that provided to other students of the same grade. Categories to be rated include travel, transitions, group activities, classroom didactics, individual work, cafeteria, restrooms, recess, unexpected events, field trips/assemblies and substitute teachers. Administration time is approximately 15 minutes. Preliminary validity and reliability studies with elementary school children have yielded promising results (Wilczenski & Ferguson, 2001).

The School Situations Questionnaire--Revised (SSQ-R) developed by DuPaul and Barkley (Barkley, 1990), is an updated version of Barkley's original questionnaire. Designed to assess the impact of problems with attention across a variety of school situations (e.g., independent work, recess, field trips, etc.), the scale contains eight items and takes less than five minutes to complete. The SSQ-R yields a situational profile for planning interventions. Two scores can be obtained from the scale: number of problem situations and mean severity of those problems. Data

analysis yielded adequate test-retest reliability and significant correlations with other parent rating scales of hyperactivity. The original SSQ was found to be quite sensitive to stimulant medication treatment effects (See Barkley, 1990).

A companion measure, the Home Situations Questionnaire--Revised, also developed by DuPaul and Barkley (1990), has a conceptual and organizational format similar to the SSQ--R but is designed to assess the impact of attention problems at home and in public situations (e.g., mealtimes, in the car). Preliminary studies of the psychometric properties of the predecessor forms-SSQ and HSQ-support the validity and reliability of the instruments (Altepeter & Breen, 1989; 1991).

The School Function Assessment (SFA; Coster, Deeney, Haltiwanger, & Haley, 1998) was designed to determine a student's ability to meet the functional demands of an elementary school program (Kindergarten through grade 6). The SFA is a judgment-based, criterion-referenced assessment which provides separate measures of a student's current level of performance on school-related functional activities. It also assesses the supports needed to perform functional tasks such as moving around the school, using classroom materials, interacting with peers, and caring for personal needs. Individual scales evaluate participation, the extent of a student's integration in key school situations; task supports, the extent of assistance and adaptations provided for a student in performing key functional tasks; and activity performance, the extent of performance of related activities within a functional task (Coster, Mancini,

Ludlow, 1999). Each scale may be completed in 5 to 10 minutes. Criterion cut-off scores help establish eligibility for special services. SFA items are written in measurable, behavioral terms that can be used directly in Individual Educational Plans (IEP).

Conclusions

The complexity of student disabilities presents challenges for educational professionals. To develop meaningful IEPs, educators need practical information about the supports (assistance and accommodations) that students with disabilities need for performing tasks. Gathering information about supports requires a consideration of contextual factors that facilitate or detract from a student's participation in school activities. A meaningful outcome for intervention efforts would be reducing supports concomitant with the student's increased independence. Informal observations and general impressions are not sufficient; measures of functional independence are necessary.

Today's educators are faced with expanded expectations and challenges in serving diverse student populations. Assessment practices need to be reconceptualized from those dominated by special education eligibility decisions to those which guide intervention planning and evaluation. Functional independence assessment identifies the degree of independent versus dependent performance in school and community contexts. Multicultural contexts are acknowledged in both assessment and intervention. Information concerning functional independence leads to measures of the extra supports required to optimize school participation. Assessing functional independence helps to

answer the question of whether a student's needs are age- or grade-appropriate or if they exceed what would be expected. Functional independence assessment also provides a positive focus on maximizing strengths, implementing alternative strategies, and performing essential activities.

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Table 1
Sampling of Functional Independence Measures

Measure	Publisher	Purpose	Rating Scale	Age/Grade Range
VABS	American Guidance Services, Circle Pines, MN	Description of communication, daily living, socialization, and motor skills	Ordinal, norm-referenced	0-18 yrs
ABES-R	Hawthorne Educational Services, Columbia, MO	Description of of adaptive behavior areas identified by AAMR	Ordinal, norm-referenced	5-18 yrs
SIB	DLM Teaching Resources, Allen, TX	Description of adaptive skills and problem behaviors	Ordinal, norm-referenced	0-40 yrs
PEDI	Psychological Corporation, San Antonio, TX	Discriminative measure of functional limitations, caregiver assistance, and modifications	Ordinal, norm-referenced	6 mos-7 yrs

Table 1 Continued

WeeFIM	Uniform Data Systems Buffalo, NY	Discipline-free measure of functional skills in self-care, mobility, social cognition, and communication	Ordinal, criterion-referenced	6 mos-8 yrs
SIM	Under development	Description of functional independence and situational variation in school	Ordinal, criterion-referenced	K-12
SSQ/HSQ	R.A.Barkley UMass Medical Center, Worcester, MA	Description of impact of attention problems in school and home situations	Ordinal, criterion-referenced	6-12 yrs
SFA	Psychological Corporation San Antonio, TX	Description of ability to meet functional demands in elementary school	Ordinal, criterion-referenced	K-6

Note. VABS = Vineland Adaptive Behavior Scale; ABES-R = Adaptive Behavior Evaluation Scale; SIB = Scales of Independent Behavior; PEDI = Pediatric Evaluation of Disability Inventory; WeeFIM = Functional Independence Measure for Children; SIM = School Independence Measure; SSQ = School Situations Questionnaire; HSQ = Home Situations Questionnaire; SFA = School Function Assessment.

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